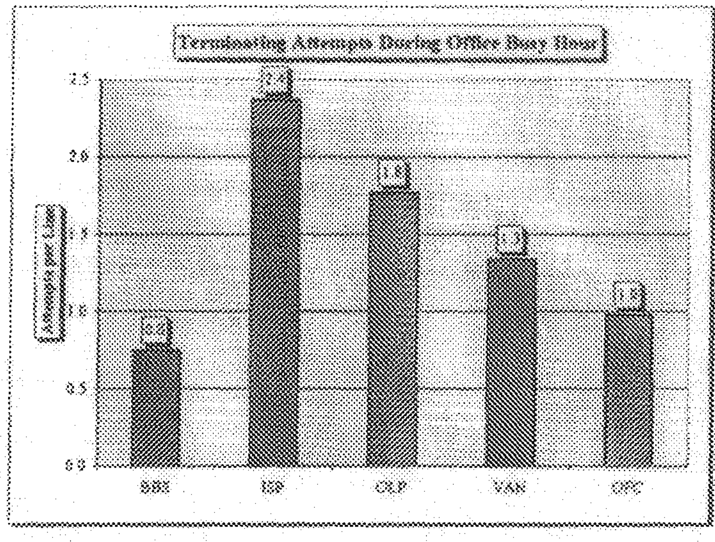
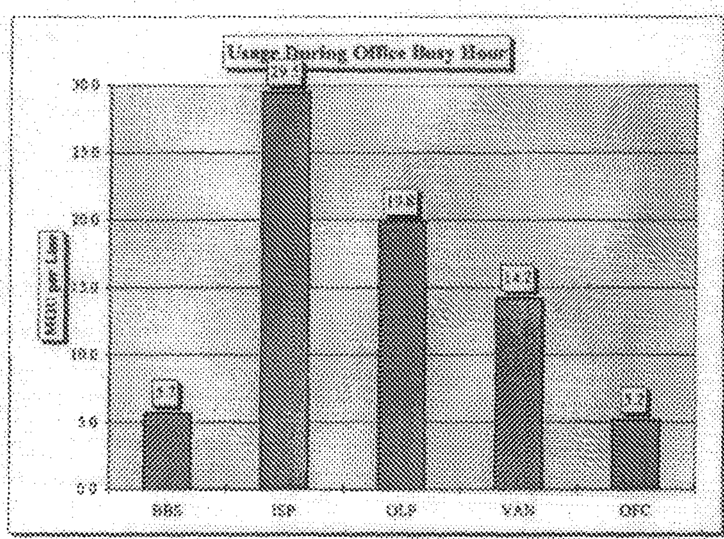
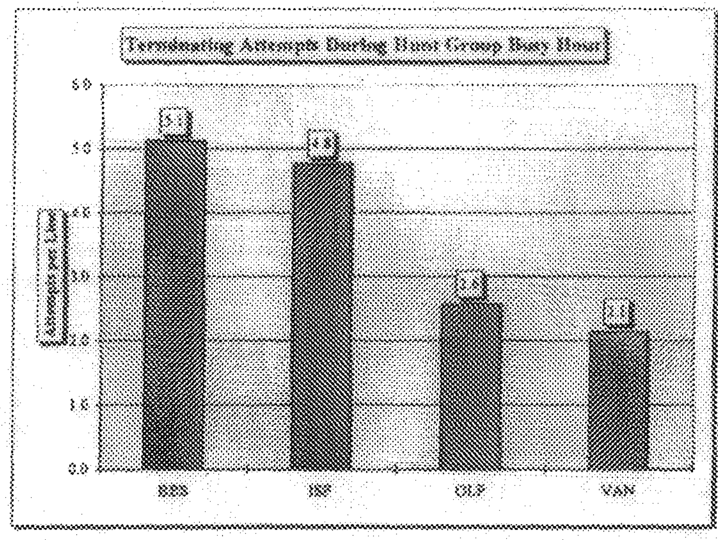
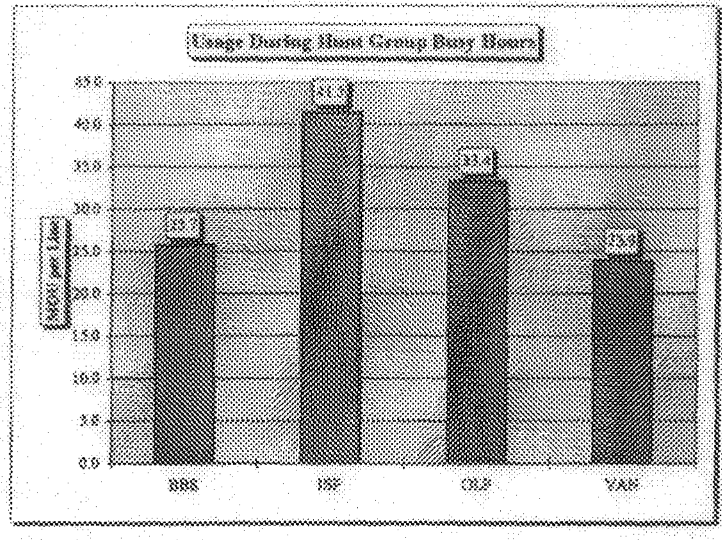
Attachment 3
Data Period: February thru August 1996



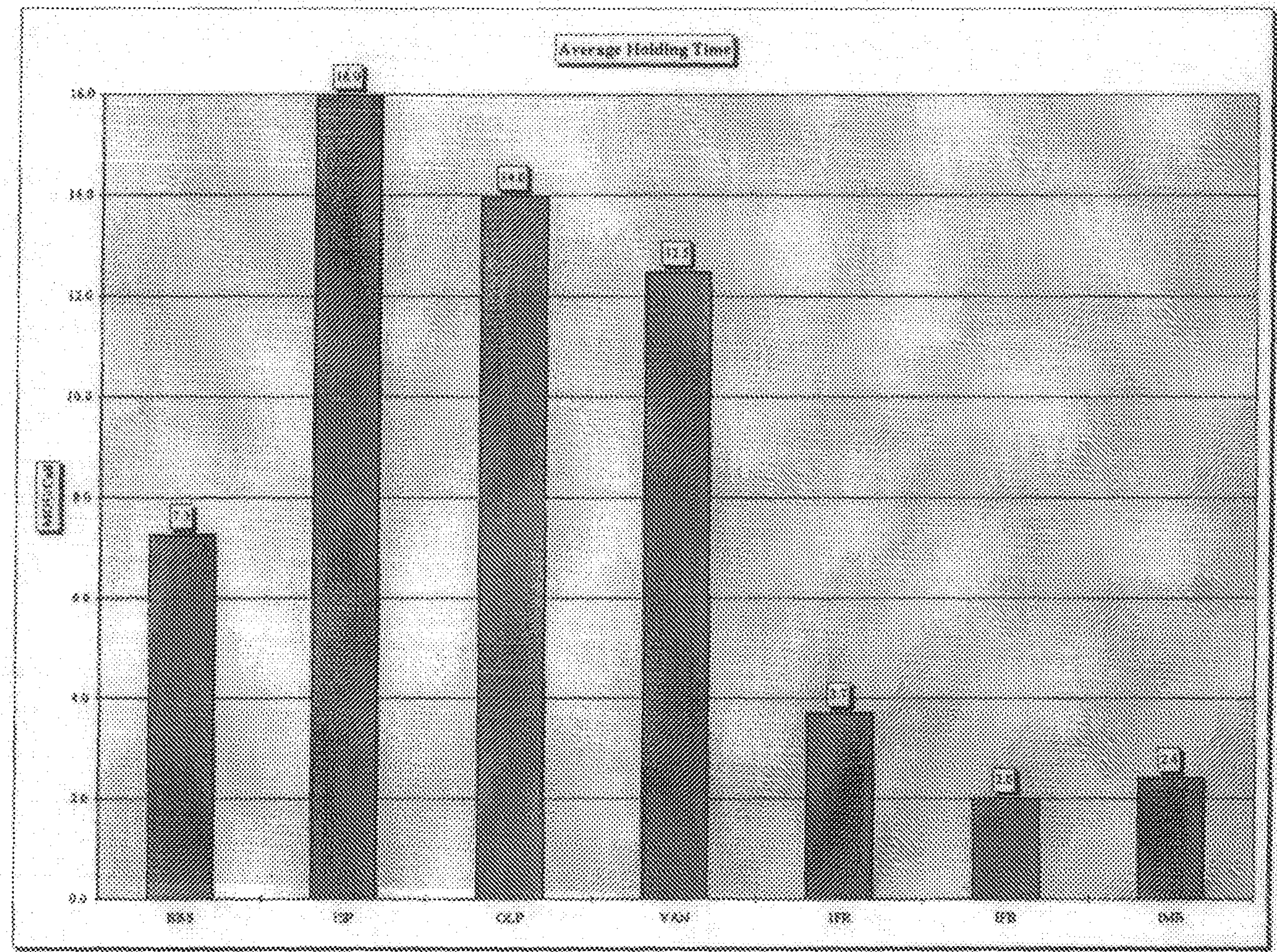






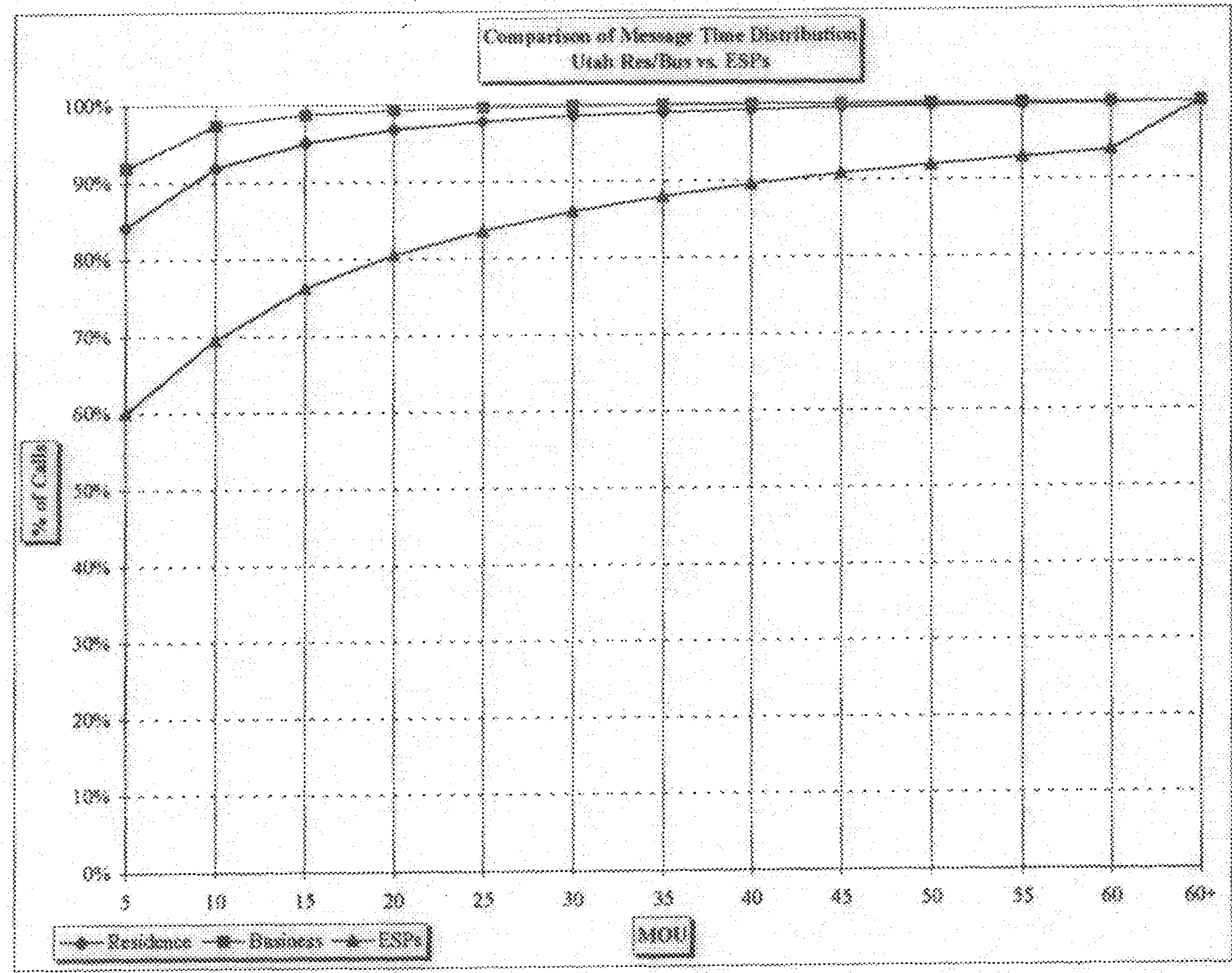
Key: BBS - Bulletin Board Service
ISP - Internet Service Provider
OLP - On Line Provider
VAN - Value Added Network

Attachment 4
Data Period: February thru August 1996

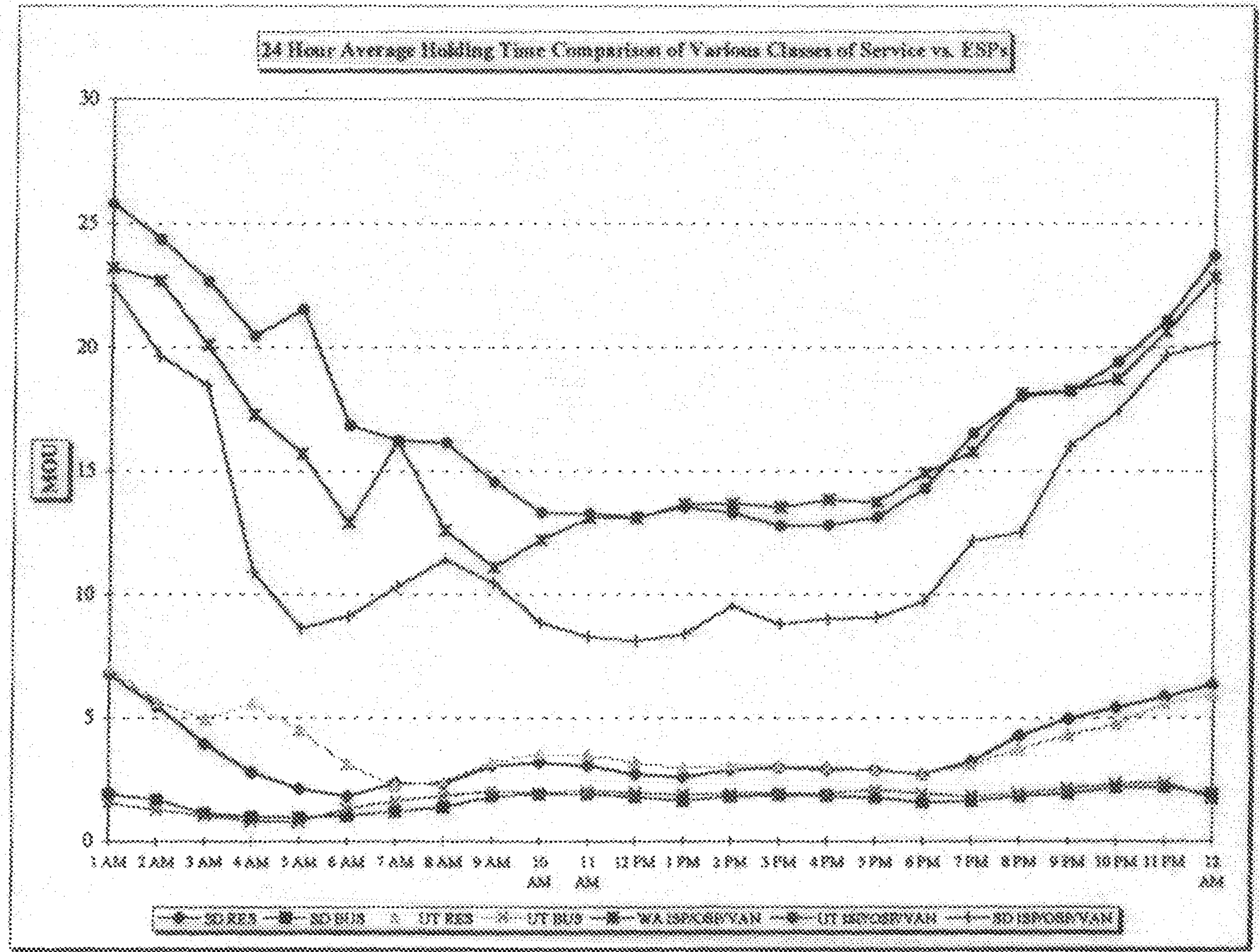


Key: BBS - Bulletin Board Service
ISP - Internet Service Provider
OLP - On Line Provider
VAN - Value Added Network
1FR - Flat Rated Residential Line
1FB - Flat Rated Business Line
1MB - Measured Business Line

Attachment 5
Data Period: February thru August 1996



State specific results - SLUS (Subscriber Line Usage Studies) of almost 43,000 residence and business lines in Utah totaling over 17 million calls; Jan-Dec 1995 annual study.
ESP results - SLUS (Subscriber Line Usage Studies) of 1,600 ESP lines in Utah totaling over 1.5 million calls; July 1996 sample study.

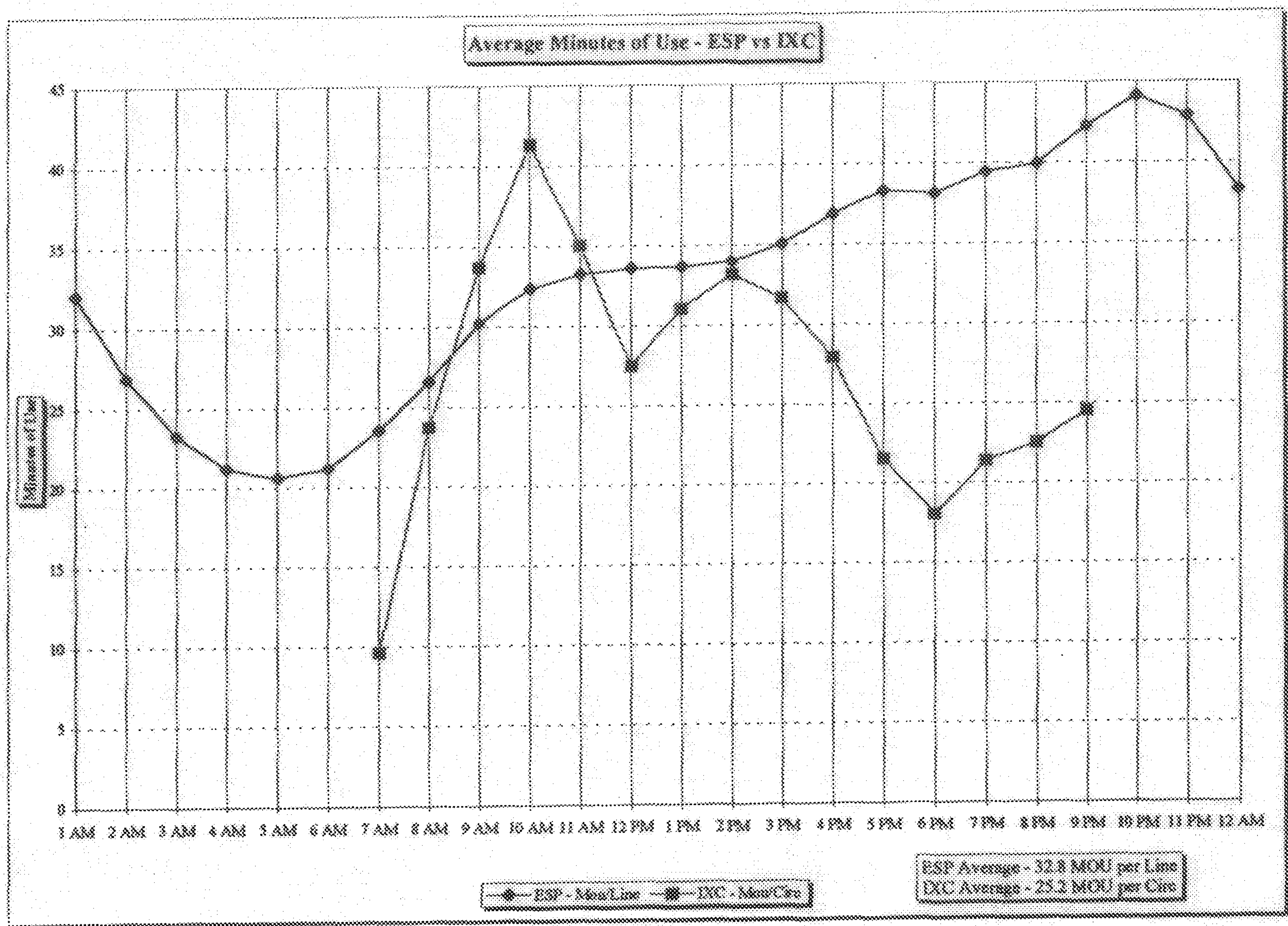


State specific results - SLUS (Subscriber Line Usage Studies) of over 78,000 residence and business lines in South Dakota and Utah totaling 24.4 million calls; Jan-Dec 1995 annual study.

ESP results - SLUS (Subscriber Line Usage Studies) of over 2,100 ESP lines in Washington, South Dakota and Utah totaling almost 3 million calls, July 1996 sample study.

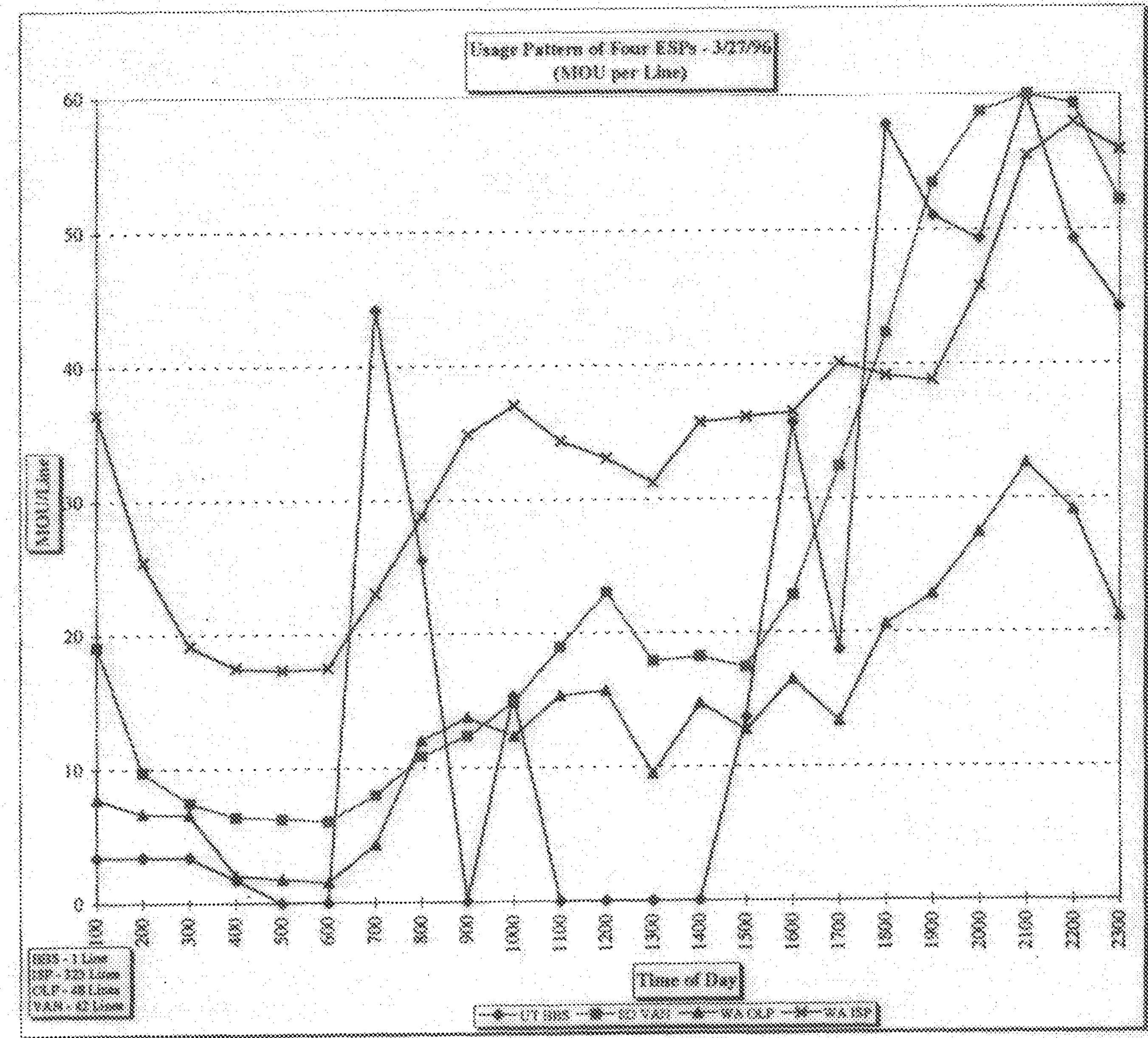
Key: ISP - Internet Service Provider
OLP - On Line Provider
VAN - Value Added Network

Attachment 7
Data Period: February thru August 1996



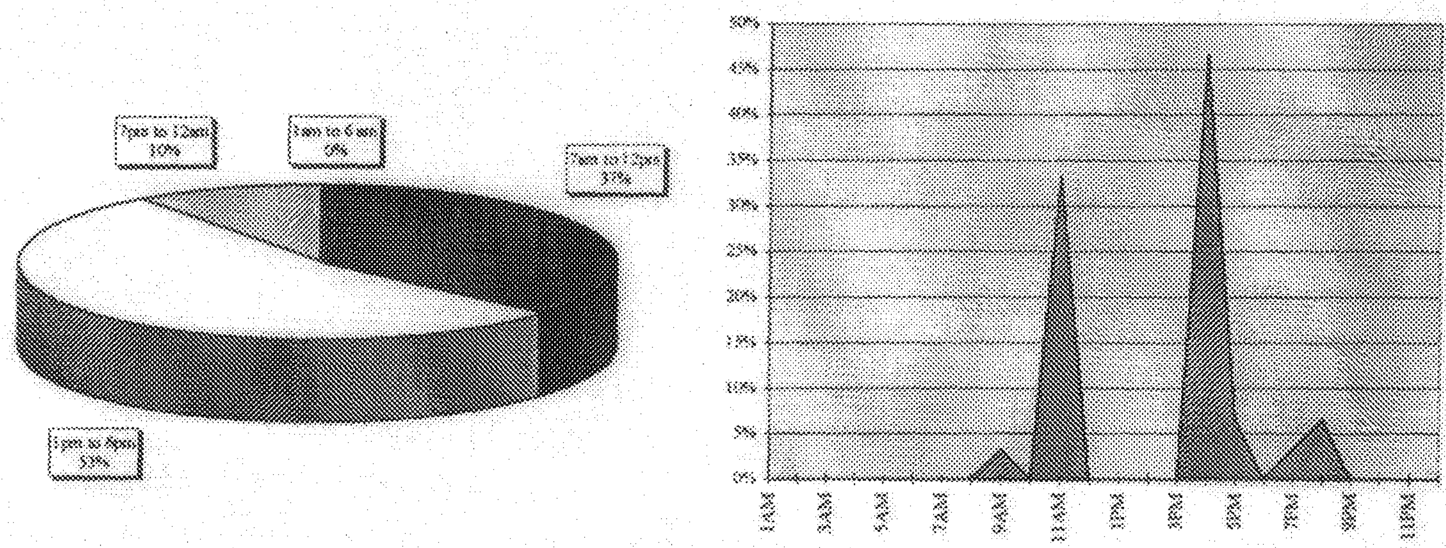
ESP Data - 3,378 Lines for 4 Weeks
IXC Data - 4,704 Circuits for 7 Days

Attachment 8
Data Period: February thru August 1996

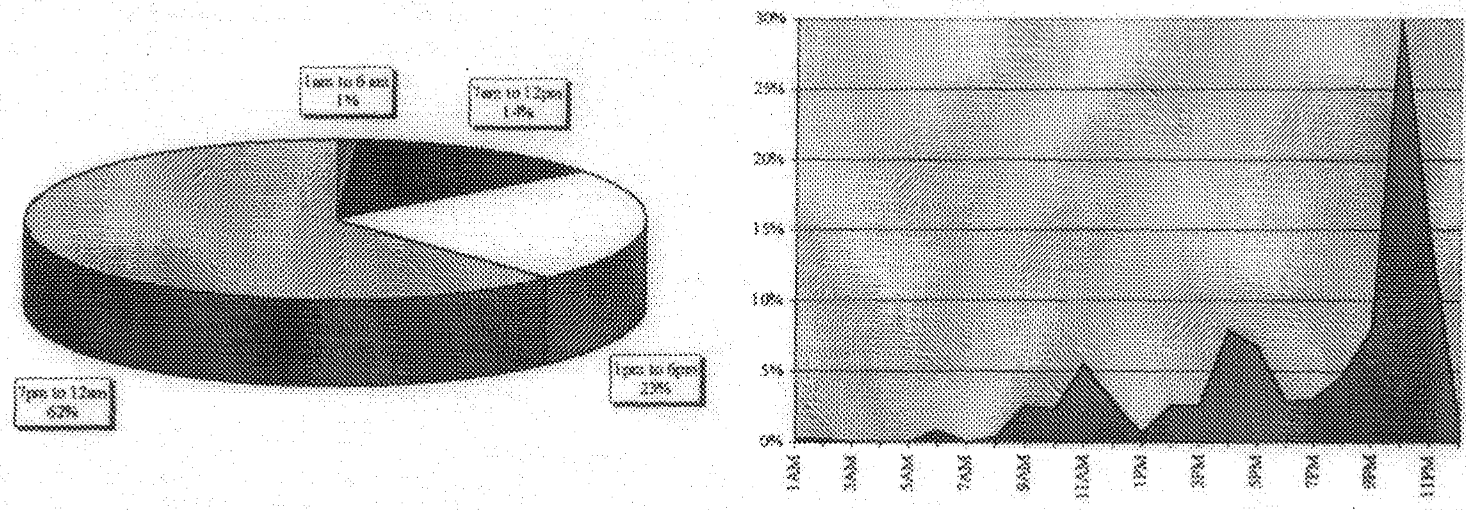


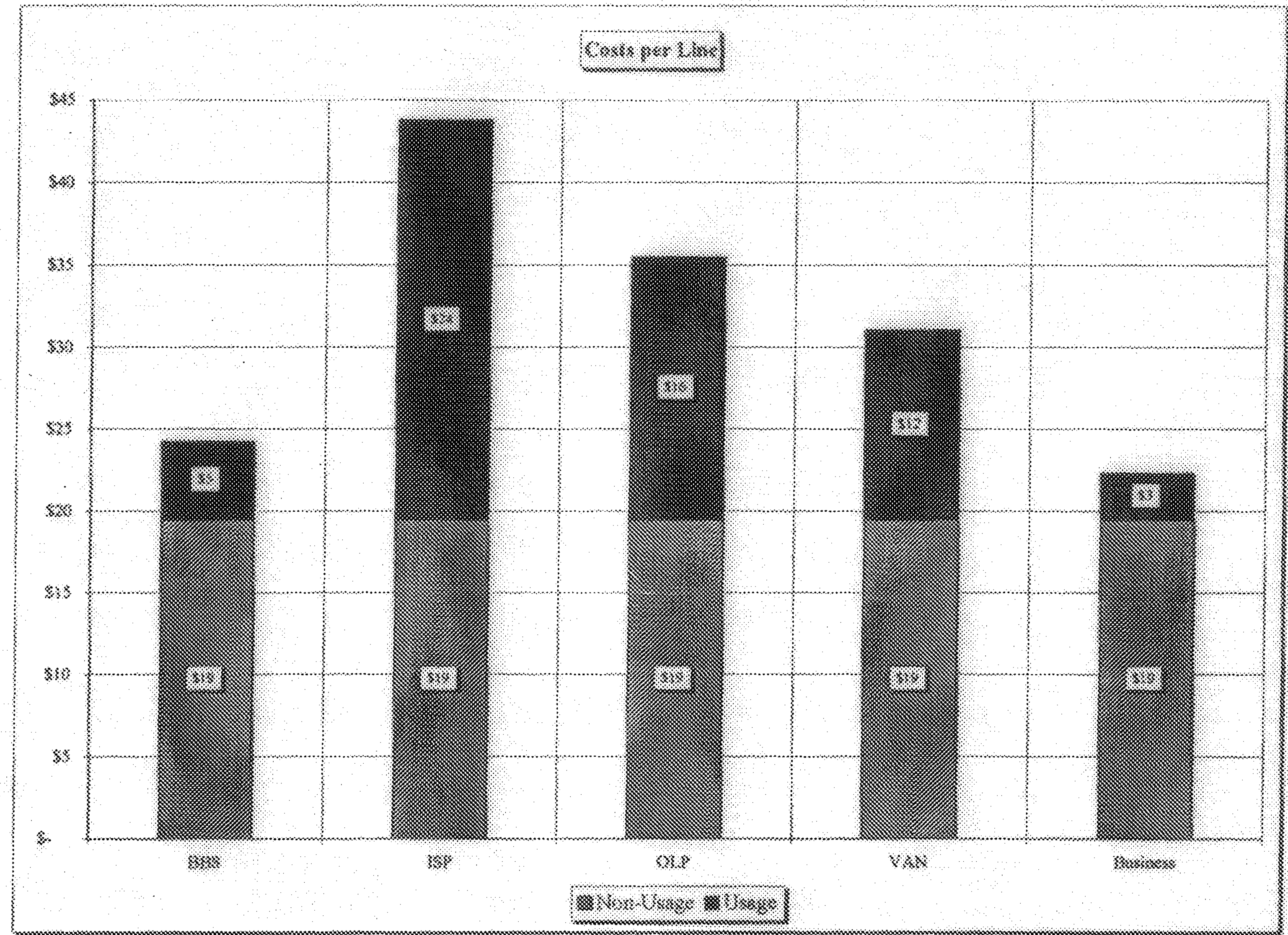
Attachment 9
Data Period: February thru August 1996

BUSY HOUR DISTRIBUTION (STUDIED CENTRAL OFFICES)



BUSY HOUR DISTRIBUTION (SAMPLED ESPs)





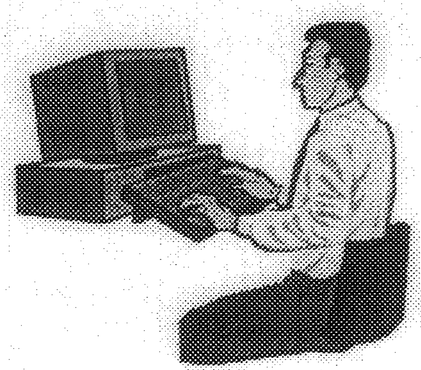
Usage Costs for the studied lines were calculated using TELRIC + Common switching and transport costs for each terminating attempt plus per MOU switching and transport costs.
TELRIC + Common switching and transport costs vary by state - for the purposes of this comparison a weighted average unit cost was developed and applied to the study results.

EXHIBIT B

Exhibit B

Local Network Implications of Internet Traffic

NETWORK ANALYSIS
March 21, 1997



Overview

There are significant impacts on the telecommunications network usage, regarding Internet Service Provider (ISP) access. Following are data and analysis regarding the characteristics of information services usage and its effects upon USWC's network, and on USWC's costs directly related to ISPs' use of the Public Switched Telephone Network (PSTN).

At the outset, it is important to understand that Internet Providers are difficult to identify in the PSTN, for at least the following reasons:

- *ISPs are not distinguished by service type*
  ISPs are currently purchasing the same services as other customers, products such as Centrex, residential POTS, business POTS, measured business POTS, and Digital Switched Services.

- *ISPs are not distinguished by quantity of lines*
  ISPs have anywhere from one access line to thousands of access lines at any given point of presence. They also grow at variable rates. Some ISPs place large orders, however, many will purchase a handful of lines each month. This is difficult to track.

- *ISPs are not distinguished by location*
  We have identified ISPs in 25% of our wire centers, some of which are in metro areas, others in smaller communities and rural areas. We have ISPs in both predominantly residential switches and predominantly business switches. There also appears to be a high amount of movement in the ISP industry. ISPs transfer from location to location as floor space needs change and there is also a large amount of merging and company buyouts.

- *ISPs are not distinguished by sales channels*
  Until recently, ISPs ordered services from a variety of marketing channels within U S WEST. The ability for ISPs to be classified in a variety of ways, and therefore have a variety of service channel options, has added to the difficulty in identifying them. USWC's new sales channel will help in future identification of ISP lines but not in the identification of the currently embedded base of ISP access lines.

- *ISPs are not distinguished by name*
  Many companies offer enhanced services as a secondary business. These ISPs are virtually invisible. In short, there is currently no obligation on the part of an ISP to identify itself as such.

Considering these factors, it becomes clear that the best distinguishing marks of ISPs are their traffic patterns and usage characteristics. But since the PSTN is a *shared* network among all customers, the difficulty remains in identifying ISPs based on these two distinguishing marks. Also, having to use these marks for identification results in reactive planning and increased investments.

The purpose of this analysis was to determine the network impacts of ISP switch connections being priced on a flat rate basis, and increased holding times stimulated by this activity. This study includes only samples of major impacts we have discovered so far. This analysis will continue as we see the implications grow.

A. Potential blockage points*

ISP dialup access can potentially impact the PSTN in three areas:

1) The switch that is serving the ISP,
2) The interoffice trunking network (including tandem trunking), and
3) The end-offices that serve the ISPs' end-users.

Blockage problems in one of these areas could potentially filter into the other areas causing problems there as well.

Blockage Drivers and Impacts to the ISPs' Serving Switches

Switches are designed with an internal concentration ratio that is most economical and efficient for traditional telephone usage. The higher usage USWC observes on ISP dialup access lines (those that are served on the line side of the switch) coupled with this internal concentration ratio can result in limited capacity being available for other customers served by the same switch. This impact is exacerbated when high subscriber/modem ratios are maintained by the ISPs and by ISP dialup access lines that are not terminating to a modem, but are "busied out". This can result in increased redialing, and subsequently, increased demand on USWC's network. Customers served from the switch may in turn experience dial tone delay when attempting to place calls. Incoming calls to customers in this switch (both inter-switch and intra-switch) may experience "fast busy" as a result of ISP activity.

Blockage to an ISP is due primarily to two factors. If an ISP oversells its services (causing excessive redialing), calls can be turned away with the end user receiving a busy signal. Concentration in the switch and the aggregation of many ISPs' dialup access lines in the switch can also both result in blockage to an ISP. This is most likely due to limited switch resources; the end-user would receive a "fast busy" signal.

These impacts typically result in reactive problem solving due to the fact that most ISPs are not identifiable in advance. It has been observed that ISPs have a high rate of movement and churn, which also impacts the ISP serving switches.

Blockage Drivers and Impacts to the Interoffice Trunking Network

The PSTN trunking network is affected in different ways. The longer call duration and increased call attempts (partially due to redialing upon blockage in the ISPs' serving switches) result in the need for more trunking capacity. One major problem is in determining where this capacity is needed.

The calling patterns of internet dialup access are very dynamic. Many ISPs have a variety of dialup access points in a given local calling area. Consider, for example, an ISP that has three access points that are all within the local calling area of a given subscriber. When this subscriber calls the first access number, he or she utilizes trunk A. If trunk A is full, this call overflows to the tandem using trunks B and C. If the subscriber cannot get through, the second access number is attempted. This number requires trunk D or, if overflow occurs, trunks E and F. If yet the third number is dialed, trunk G is used or, if overflow occurs, trunks H and I. At any given time this subscriber could dial any of the three numbers, all of which would impact trunking differently. Blockage experienced in one area might even disappear the next day if the subscriber decides to call a different access number that correlates with a different access point.

---

* Please refer to the diagram entitled "Network Impacts", in regards to this section.

In the above example, nine trunk groups could be impacted by a single caller to an ISP. These dynamic changes in calling patterns have often resulted in placing significant demands upon USWC's network, requiring the company to provide more trunking than was actually necessary. This has also resulted in the blocking of voice calls handled through the same network.

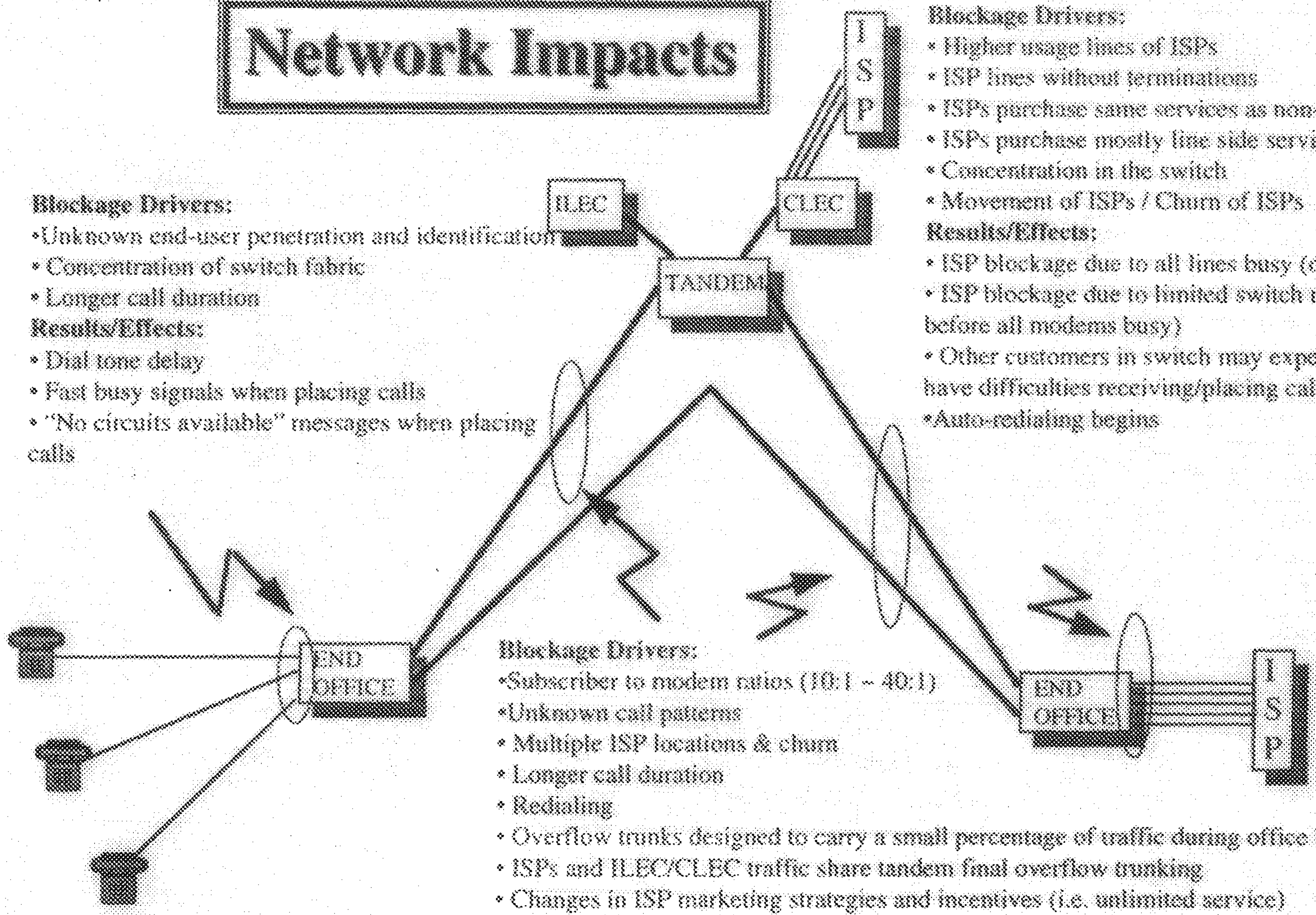
B. Case studies

Usage of the network for internet access is having an increasingly volatile impact upon USWC's telecommunications network. The use of this network for non-traditional purposes is becoming increasingly apparent. This is not to infer that the network cannot or should not be used for such purposes, it only means that such changes must be planned for, and properly paid for, by all who use the resource.

As presently constituted, the ISP environment dealt with today has meant that USWC switch ports are being tied up without full compensation or remuneration for use of these assets. Problems of this kind are generally confined to local networks. Additionally, ISPs could aid in planning for the logical expansion of the networks used to support proliferation of their services, by expeditiously sending their forecasts to a centralized forecasting group established at the ILEC. This data could then be incorporated in an ILEC plan used to create facilities which will better meet the needs of ISPs.

Attached as exhibits are several case studies reflecting recent examples illustrating increased usage and changes in traffic patterns within USWC.

Network Impacts



Blockage Drivers:
- Unknown end-user penetration and identification
- Concentration of switch fabric
- Longer call duration

Results/Effects:
- Dial tone delay
- Fast busy signals when placing calls
- "No circuits available" messages when placing calls

Blockage Drivers:
- Higher usage lines of ISPs
- ISP lines without terminations
- ISPs purchase same services as non-ISP customers
- ISPs purchase mostly line side services
- Concentration in the switch
- Movement of ISPs / Churn of ISPs

Results/Effects:
- ISP blockage due to all lines busy (overselling of ISP services)
- ISP blockage due to limited switch resources (calls turned away before all modems busy)
- Other customers in switch may experience dial tone delay and have difficulties receiving/placing calls
- Auto-redialing begins

Blockage Drivers:
- Subscriber to modem ratios (10:1 ~ 40:1)
- Unknown call patterns
- Multiple ISP locations & churn
- Longer call duration
- Redialing
- Overflow trunks designed to carry a small percentage of traffic during office busy hour
- ISPs and ILEC/CLEC traffic share tandem final overflow trunking
- Changes in ISP marketing strategies and incentives (i.e. unlimited service)
- ISPs in ILEC/CLEC territory: hard to identify and plan for

Results/Effects:
- Increased direct trunk overflow impacts the tandem switches
- Blockage experienced by ILECs/CLECs
- Trunk capacity used for call set-up attempts and not actual traffic
- Dynamic changes in blockage levels and locations
- Overnight increases in traffic volumes
- Interoffice call blockage

Case Study #1

Office A: Near Seattle, Washington

One example of how internet access is changing the telecommunications landscape in USWC serving territory is in Washington state. USWC recently discovered a large ISP presence in a small community outside of Seattle. This was discovered when trunk usage began to increase rapidly during the end of fourth quarter 1996*, resulting in significant call blockage. Small residential subscribers (normal voice transport) experienced blockage, as well as larger customers and modem users (data transport). This dramatic increase in usage triggered a search for the source of such traffic, including users of ISP lines, in the area. It was determined that one office in this community (Office A) serves over 800 ISP lines. Since this discovery, USWC has also experienced switch blockage as well as dial tone delay in this office.

This community does not have local calling to a metro area in the same vicinity, or to a local tandem switch. All trunking is direct from end office to end office and, since there is no tandem, there are no secondary routes for carrying overflow traffic (i.e., once the direct trunks are fully utilized, all other calls are blocked). Office A became the hub for ISP access lines because it has direct trunking to all other end offices in this community. These are the trunk groups that are experiencing high usage and some blockage.

Assuming the ISP lines are evenly spread across the forty-three switch elements in this switch, each element would serve twenty ISP lines and 433 other lines (there are 19,500 total lines in the office). Each element has 64 paths which can support 768 five minute calls, during a one hour period. If the ISP lines are in use for the entire hour, the number of five minute calls that could be accomodated by the 433 other customers is reduced to 528 calls, from 768 calls, during the hour. This is a 31% reduction in the amount of calls that can be placed/received.

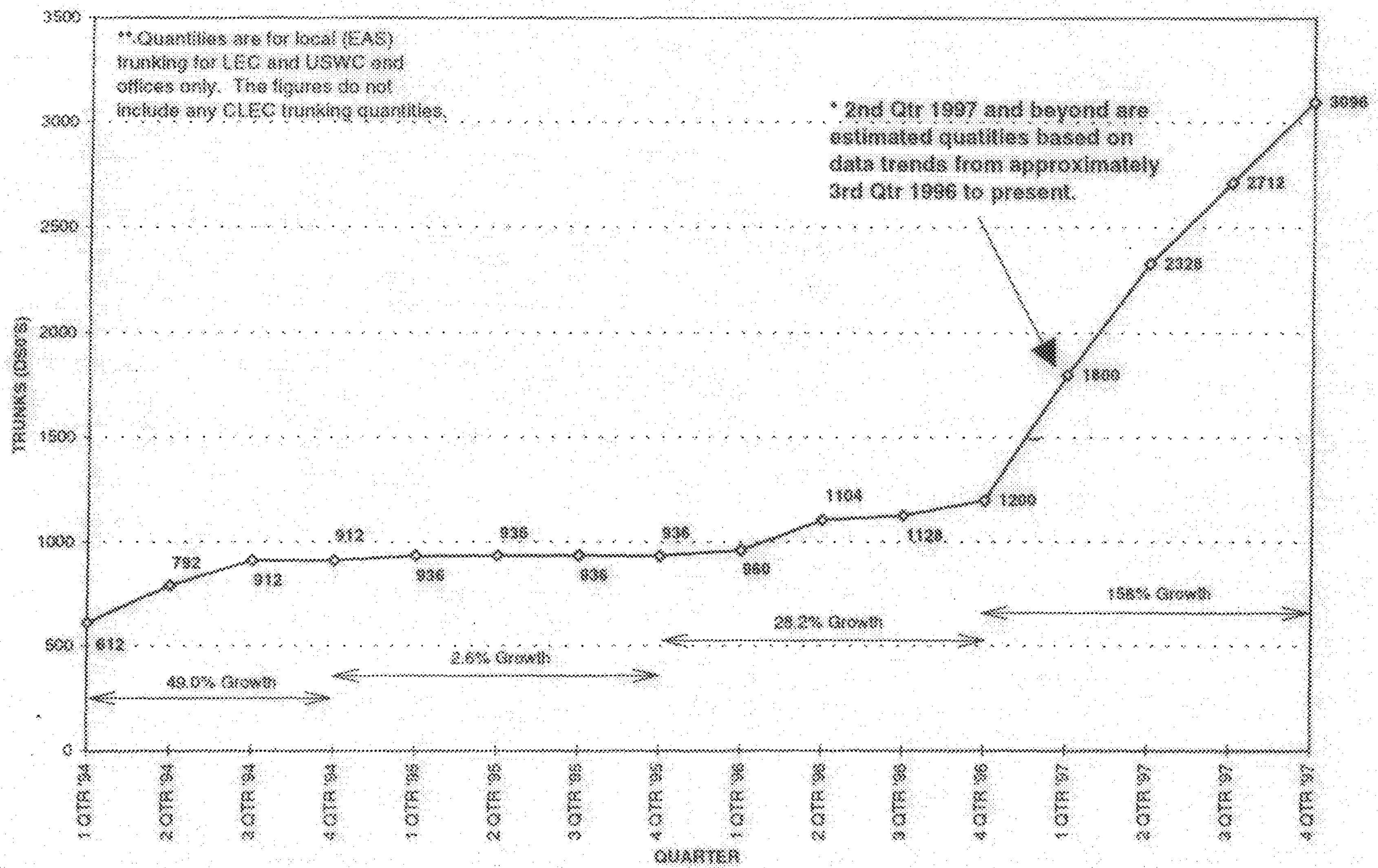
In reality, the ISP lines are *not* spread 100% evenly across the switch because they are not distinguished from other customers at assignment time. If spreading is done across half of the switch elements, each element would serve forty ISP lines and 413 other customers' lines. If the ISP lines are in use for the entire hour, the amount of five minute calls that could be made by, or placed to, the 413 other customers would be reduced to 288 calls from 768. This is a 62.5% reduction in the amount of calls that could be placed or received. In effect, service quality for *all* customers (not only those placing data calls) is substantially reduced.

Office A experienced an 87.5% increase in trunk demand during 1996. Over the last five quarters, this office also experienced a 159.5% increase in message trunks, with 72% of that growth being realized during the fifth quarter. Notwithstanding the difficulty in identifying ISPs referenced earlier, it would be erroneous to believe that other factors accounted for the bulk of this increase. Unfortunately, addressing this demand has placed USWC in the precarious position of adding trunk capacity to satisfy completion of relatively non-productive calls -- since some ISP users were found to leave connections on-line for excessively long time periods. Not surprisingly, this significant increase in traffic is also causing the premature exhaust of the capital investment USWC has in Office A.

* See attached chart: "Office 'A' Local Message Trunking Growth"

OFFICE 'A' LOCAL MESSAGE TRUNKING GROWTH**

1994 to 1997*



Case Study #2

Office B: Washington State

Office B is a remote switch in a small town in Washington state, which does not have direct trunking to any local central offices. All trunking of calls are done via the host office. Office B has umbilical links between the host and its remote switches, which give the customers connections to the host switch, allowing subscribers to originate and terminate calls destined for the Office B switch. The remote switches being used have a concentration ratio of eight to one, for the line units. Currently there are 10752 lines installed with 9062 working (84% fill), with 2.5 CCS per main station.

In early February (1997) a business providing internet service placed an order with USWC for forty-eight analog 1MB lines. This customer had 200 subscribers using their service, with the anticipation of growing to 2000. Until this time, the Office B remote switch had not experienced any significant service problems. At the time the ISP became active, the remote switch started to have blocking internally as well as on the umbilical circuits to the host switch. The ISP customer reported that his customers were getting busy indications, and that the ISP lines were idle. The ISP customer wanted to know what could be done about the problem. After investigating the situation, USWC discovered that the 48 lines were generating 36 CCS per line, which caused higher usage and blocking over the umbilicals and line unit blocking in the remote switch module. Thus, all customers served from the remote switch were impacted and calls were being blocked before they could get to the ISP lines. Not only were the ISP's customers being blocked, but other customers as well, who were using the PSTN.

USWC informed the marketing representative about the situation which in turn lead to a meeting with the customer. The outcome of this meeting resulted in moving the customer's 48 ISP lines into the host switch and serving them with trunking arrangements instead of a line side connection. This alleviated the customer's problem.

Case Study #3

Office C: Salt Lake City, Utah

Salt Lake City's telecommunication network infrastructure has been affected by the internet access traffic requirements*. In the fourth quarter of 1996, U S WEST Communications experienced huge increases in the traffic flow. In only a six week period of time, Office C realized a 148% increase in traffic demand. This increase motivated USWC to search for ISP lines in metropolitan Salt Lake City. The most heavily impacted trunks were found to be between Office C and the tandem. It was determined that a high percentage of the calls were data traffic. In a twenty-four hour study period, 94% of the calls that had been established for more than two hours were determined to be data lines.

Toward the end of 1996, in order to provide for the huge increase in traffic, U S WEST Communications added 169 trunks to Office C. In 1997 U S WEST Communications has already augmented from Office C to the tandem, an additional 216 trunks.

For a six week time period, U S WEST Communications studied the usage characteristics of the trunks at Office C. The study period went from January 27, 1997 to March 8, 1997. The usage characteristics that were utilized for this study were peg count, CCS, and overflow. Actual usage and overflow characteristics for each hour of each day for the six week period were graphed (see attached) to depict traffic patterns.

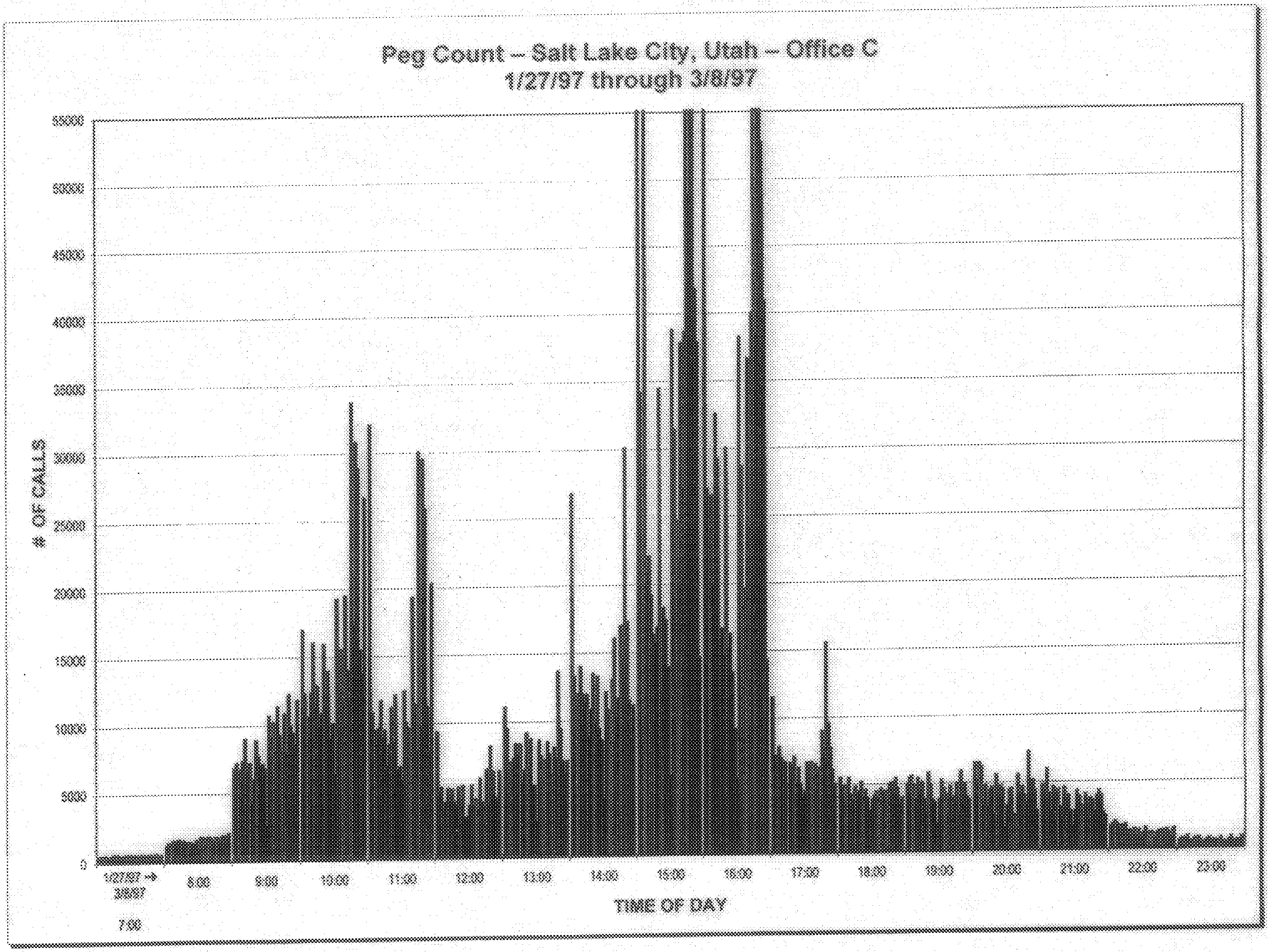
The graphs illustrate the number of call attempts to Office C (peg count), as well as the CCS (or usage), at Office C and the amount of overflow traffic from this office to the tandem.

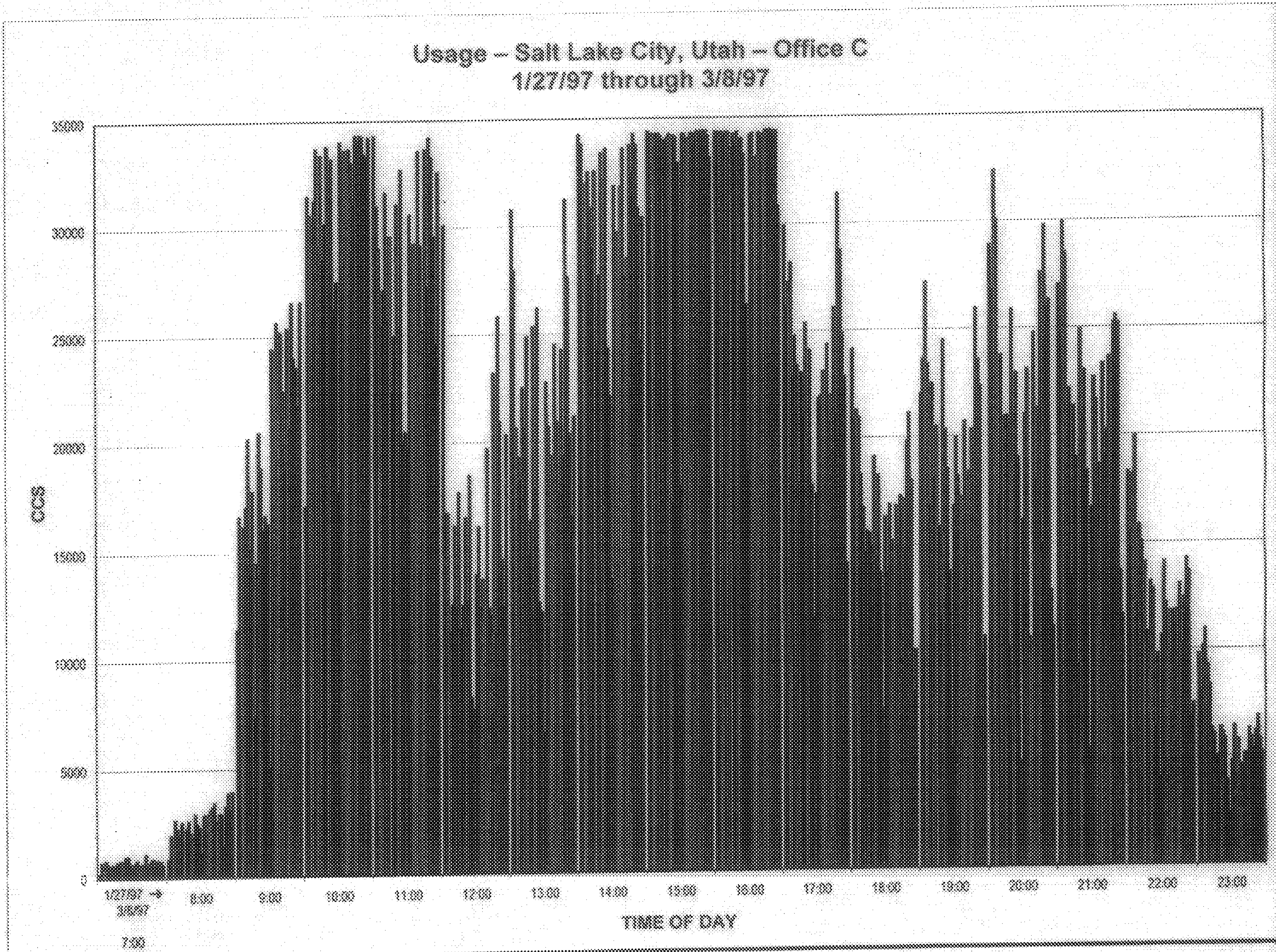
The study portrays Office C peg count highest between 3 p.m. and 5 p.m. (15:00 to 17:00) with the next highest connection attempts between 10 a.m. and 12 p.m. (10:00 to 12:00) and the remainder of the day appears to be much lower in demand. The CCS or usage, however, illustrates a different result. The highest CCS is from 2 p.m. to 5 p.m. (14:00 to 17:00) and the second highest period is between 10 a.m. and 12 p.m. (10:00 to Noon). This appears to be very similar in characteristics to the peg count data, although the usage does not significantly drop after 5 p.m. In fact, the usage remains relatively high until 10 p.m. On the last graph, which illustrates the overflow, the expected overflow period is from 3 p.m. to 5 p.m. (15:00 to 17:00) with some overflow from 10 a.m. to 12 p.m. (10:00 to 12:00).

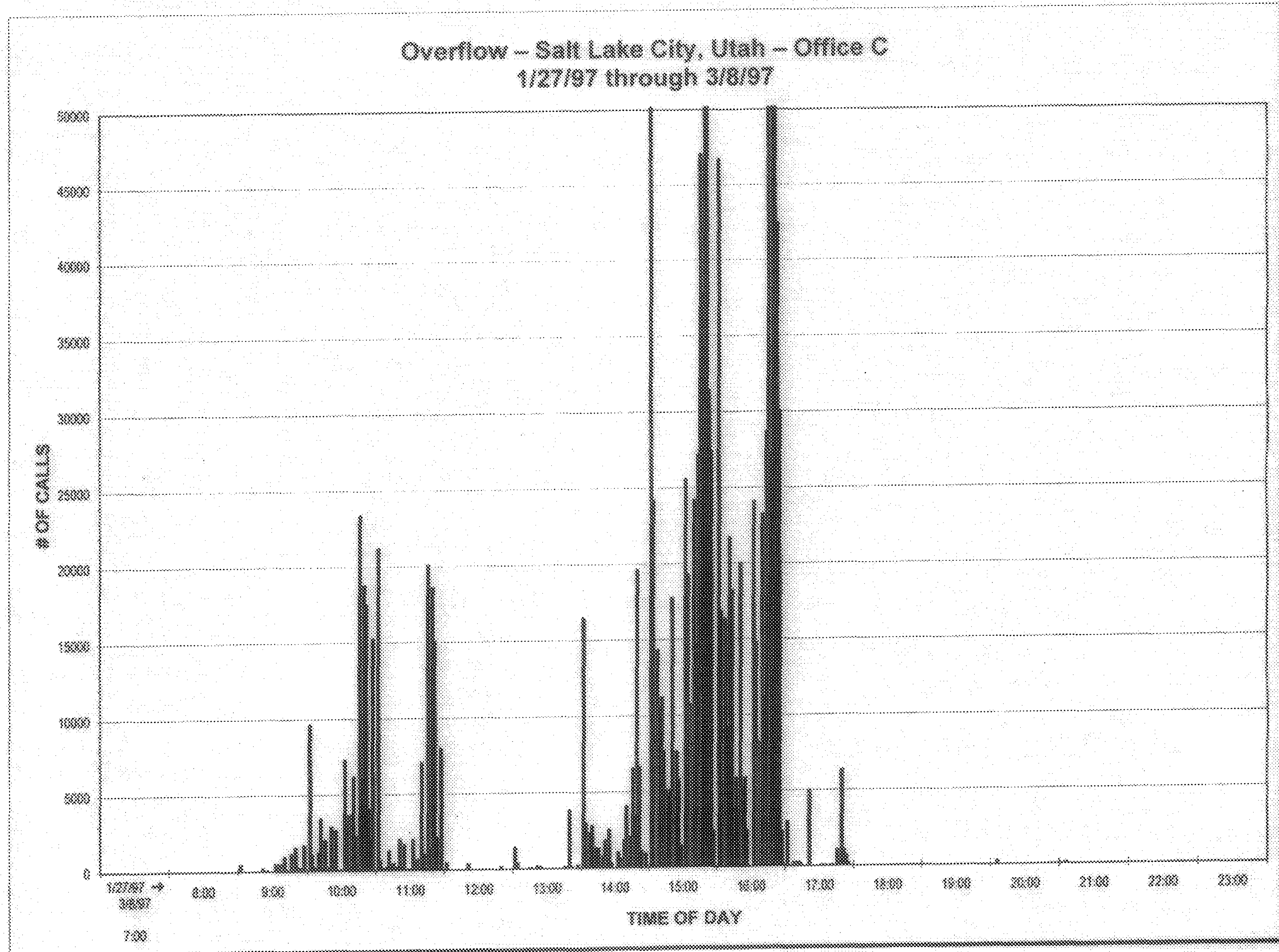
The conclusion that U S WEST Communications has drawn from this study is that the ISP usage has affected the usage characteristics of Salt Lake City, Office C infrastructure. This conclusion is supported by the CCS/usage data as it compares to the peg count. Historically, in a telecommunications network the peg count and the CCS/usage should be consistent with one another. As can be observed, the CCS is consistently high from 9 a.m. to 10 p.m. for the entire six week study period, with two exceptions between 12 p.m. and 1 p.m. and again from 6 p.m. to 7 p.m. This study supports the fact that ISP demand has increased the CCS/usage significantly because, as was illustrated in the six week study, the usage continues to remain high throughout the day and yet peg count fluctuates. The high usage illustrates that the ISP end users are connecting and remaining on line for long periods of time.

---

* See attached bar charts reflecting Peg Count, Overflow, and Usage statistics for Salt Lake City Office C, for the first quarter of 1997.


Peg Count – Salt Lake City, Utah – Office C
1/27/97 through 3/8/97
OF CALLS
55000
50000
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
1/27/97 → 3/8/97
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
TIME OF DAY


Usage – Salt Lake City, Utah – Office C
1/27/97 through 3/8/97
CCS
35000
30000
25000
20000
15000
10000
5000
0
1/27/97 → 3/8/97
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
TIME OF DAY


Overflow -- Salt Lake City, Utah -- Office C
1/27/97 through 3/8/97
OF CALLS
50000
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
1/27/97 → 3/8/97
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
TIME OF DAY

Case Study #4

Office D: Portland, Oregon

In November, 1996 we identified just under 6000 ISP lines in the Portland local calling area. These lines are served by ten end offices with 94% of the lines out of one office, referred to as Office D. There are two switches in this office that serve these ISP lines.

Since that time, more ISPs have been identified and many of the ISPs have grown in number of Internet access lines. One ISP grew its number of Internet Access lines by 42%. Another grew by 19%. Both of these ISPs have over 800 lines each.

The high quantity of ISP lines aggregated in one office along with the aggressive growth rate of the ISPs has resulted in changing traffic patterns, as well as in higher usage levels. For example, in one of the switches in Office D, the ISPs account for 5.7% of the total lines but account for 17% of the total usage of the switch during the office busy hour (based on two weeks of data gathered in November, 1996).

This has resulted in switch blockage. The main contributor to this is the fact that the ISP lines are not identified before being assigned to the switch. Assigning lines to the switch elements is a mechanized procedure that is based on the type of line (1FR, 1FB, etc.) being assigned. Each type of service is associated with an expected CCS value. Since the ISPs purchase the same services as other users, they are assigned the same expected CCS value. A 1MB line, for example, would be assigned the same expected CCS value whether an internet provider puchased it or a traditional voice customer.

When switch blockage is observed, line cuts are performed. This is the transferral of lines from one switch element to another in order to balance the usage load across the switch. The first steps are to identify which lines need to be moved and determine where to move them. In office D it was discovered that one ISP, with 675 lines, had 52% of it's lines in four switch elements (The best spread possible would have resulted in just 2% of its lines in each switch element). So far, over 450 line cuts have been performed to help alleviate the impacts caused by this imbalance. Determining where to move the lines is difficult because of all the other ISP lines in the switch. Moving ISP lines may relieve the switch module the lines are being moved out of, but end up negatively impacting the switch element to which the lines are being moved.

There comes a point when there is no benefit in doing more line cuts. The switch becomes as balanced as is possible. The next step is to increase the usage capacity of the switch. One solution being considered for office D is to reduce the line concentration ratio. This would just increase the usage capacity of the switch for the existing lines, but would not provide any capacity for new growth. The cost of this solution is over $3M.

Also, to help alleviate the continuously increasing trunking impacts in Portland, many new trunks have been added. Since the beginning of 1996, when there were 840 trunks from Office D to the local tandem to adequately meet the usage needs, an additional 828 trunks have been added.

Case Study #5

Office E : Phoenix, Arizona

Recently, increased trunk blockage occurred in Phoenix, Arizona. It was then discovered that one office in the area, referred to here as Office E, serves over 4500 ISP lines (~40% of all identified ISP lines in the Phoenix metro area). The most heavily impacted trunks were between the local tandem and Office E. This trunk group historically was used to carry overflow traffic originating from the other switches in the local area. These are new demands on the switch.

In order to alleviate the blockage experienced, major trunk augmentations were completed between 11/22/96 and 2/10/97. Consequently, 456 trunks have been added from the tandem to office E as well as 912 trunks augmented to direct trunk groups between office E and other end offices in the area. Line cuts have also been performed to evenly spread the high usage in a way that reduces switch blockage and minimizes redialing.

For three weeks (2/2/97 through 2/22/97), USWC studied the usage characteristics of the internet access lines belonging to four of the ISPs served out of office E (note that this data was captured after line cuts and trunk augmentation were performed). The lines studied accounted for 66% of the ISP internet access lines served out of this office. Usage levels were high throughout the day. During the 11 a.m. hour, ISP lines averaged 45.5 minutes of use. During the 4 p.m. hour, the average usage rose to 54.31 minutes. The busiest hours for the ISP traffic were 10 p.m. to 12 a.m., during which the average usage for these lines was 59.4 minutes. The overall average for the three weeks (24 hours/day and seven days/week) was 42.72 minutes.

Two of the ISPs were able to use their combined 2318 lines for the full 60 minutes of their busiest hour(s) throughout the study period. During the same time, they blocked 88% of the calls placed to them (the entire capacity of the lines were used to support 12% of the traffic placed to them). This blockage resulted from the ISPs overselling their services, impacting our trunking (redialed calls that receive busy signals still use trunk capacity) and our investment requirements.

What this shows is that not only have we added enough trunk capacity and performed enough line cuts to enable our customers to use their lines for a full hour, we have also provided enough trunk capacity to carry traffic to the ISP that the ISP cannot even support. If we do not provide this extra capacity, our other customers would feel the impacts since they share the same trunk network with the ISPs.

Case Study #6

Office F: Seattle, Washington

Office F demonstrates how USWC procedures designed to ensure appropriate interoffice trunking levels (through forecasting future trunking requirements based on predicted call busy hour and blockage information) recently have become frustrated with increased ISP usage. Under normal use, USWC offices provide for an engineering design that exceeds actual call volume requirements to avoid switch blockage.

Attached is an actual depiction of traffic usage, call attempts, and percent blockage data for a particular trunk group associated with this office, for one week per month from September, 1996 to January, 1997*. The report depicts dramatic increases in the usage and call attempts made during this time. The number of calls attempted over this trunk group for the week of January 5, 1997 was over 650,000 compared to 340,117 in September. The number of calls attempted over this trunk group nearly doubled in just four months. The report also indicates that usage steadily increased and is spread over many hours, as opposed to being concentrated in a single busy hour. The busy hour for this trunk group has historically been from 10:00 to 11:00 AM. Now, the trunk group has steady high usage from 10:00 AM to midnight, with the highest usage being from 3:00 to 4:00 PM. The average usage per trunk nearly doubled from November to January. This is not a seasonal occurance.

USWC assigned a task force to investigate these dramatically increased call volumes and fundamentally new call characteristics. Part of this work focused on determining what the specific changes were, and why they were occuring. USWC determined that a large number of calls were of much longer duration than expected for voice calls. Many of the calls have holding times of more than two hours, and were made primarily to lines with modems. It was then determined that much of the changed traffic patterns were due to data transport or were internet related.

As is commonly known, some ISPs began a very public offering of flat rated unlimited internet access during December of 1996. Coincident with this offering, traffic on USWC's Office F network dramatically increased -- by 60% in just two weeks. Although USWC took extraordinary counter measures, including increasing the number of high-capacity trunk lines by 150%, it was not enough. Interoffice trunk blocking cannot be completely resolved by simply adding trunk lines.

From the cost recovery standpoint, it became clear that if consumers can access an internet provider without paying for that access on a usage basis, there is no incentive to terminate the call, even if the subscriber is no longer using the service. Yet, the two-hour call continues to consume capacity. In the case of Office F, consumers had difficulty getting through to their internet provider, so they frequently left the connection up indefinitely.

U S WEST has identified approximately fifteen internet service providers (ISPs) served by Office F. Several ISPs being served out of the alternative local exchange company (ALECs) offices were also identified. The traffic stimulated by these internet providers is very different both in quantities and duration than traditional voice traffic for which the public network has been engineered. On average, local customers' usage is 3.5 hundred call seconds (CCS) or less than six minutes, during the busiest hour of the day. The ISP traffic is much higher, with many of the users stimulating 36 CCS per hour for hours at a

* See attached chart: "Office 'F' Busy Hour Study"

time (the equivalent of being on the line an entire hour). In fact, connections have been identified that were established on Monday morning and remained up until Friday afternoon.

U S WEST's local network is designed and managed according to long-standing traffic engineering standards. These standards are based on statistical models that predict the probability that calls will be delivered at prescribed blocking levels, given specific traffic characteristics. Local networks are designed with the objective of blocking less than one percent of calls during the busiest hour during the busiest period of the year. To meet these blocking objectives, a variety of trunking configurations are applied in local networks. In large metropolitan networks, like Seattle, traffic is completed over circuits directly between end offices and through tandem or transit offices that connect multISPle local offices.

Trunks between a specific end office and a tandem are common trunks and shared by all traffic connected through the tandem. When callers from all over the Seattle area are trying to reach ISPs served in a single switch, and the ISP cannot answer all of the calls, the direct trunks between end offices begin to fill up, causing traffic to be rerouted through the tandem. If the calls are still not answered, the tandem quickly reaches capacity. When this occurs, the calling customer receives a no circuit announcement (all circuits busy) or tone.

Calls to internet providers have introduced additional traffic management complexity. Many internet providers have significantly more customers than access connections. When all of their access connections are in use, ISPs' customers continue to generate multiple, unsuccessful attempts. Because these attempts are generated by computers, unsuccessful call attempts may be generated until a connection is established. These multiple attempts create congestion in the local network, that block both ISP and traditional voice traffic.

Further worsening the congestion at the tandem is the fact that some ALECs are delivering all of their traffic to the tandem. The combination of the ALEC traffic and the ISP traffic stretches the engineered capacity of the tandem switch. Some ALECs are connecting directly to the end office, which helps alleviate some of the pressure. U S WEST is working with these providers to re-configure their networks; U S WEST is also reassigning its operator services traffic to other switches.